wait only to see what a woman can accomplish, not what she can endure.

DISCUSSION

ALFRED BAKER SPALDING, M. D. (Stanford Hospital, San Francisco)—Doctor Loomis has covered the subject of birth injuries from an obstetrical standpoint so well that in discussing his paper one finds very little to criticize and not much more to add. I agree with Loomis that we all have probably had more experience with birth injuries than we realize, unless routine autopsies have been made upon newborn babies dying from asphyxia. I thoroughly agree with Loomis that it is the sudden extraction or the sudden relaxation of pressure from the baby's head that usually causes damage. Such injuries may even occur with Cesarean section. With one of my patients suffering with fibroids of the uterus and eclampsia, the baby suffered from secondary asphyxia, and the autopsy showed hemorrhage of the brain.

I believe the more frequent use of the cervix bag will help in limiting the number of these injuries, as the cervix at times very tightly grips the baby's head, and probably constriction not infrequently results in birth injuries. Also I have found the Kjelland forceps seem to have been of distinct assistance in preventing cranial injuries associated with forceps delivery.

I finally wish to agree with Loomis that the more frequent resort to median episiotomy will probably lessen the number of cranial injuries.

L. A. EMGE, M. D. (350 Post Street, San Francisco)—Doctor Loomis deserves fulsome praise for this very timely and important discussion of birth injuries. I agree with Spalding that the salient points have been covered so well that little remains to be added. May I say that occiput posterior positions occur with much greater frequency than is generally believed. Only too often examinations during the first stage of labor are neglected or left to the unsuspecting intern. Consequently, many labors are unduly prolonged and recognition of the course is overlooked by virtue of nature's act in spontaneously rotating the head to a more favorable position. It is during this period of greatest pressure that cranial injuries take place. Since the event of Gwathmey's method of rectal anesthesia I have noticed that the conversion of posterior into anterior positions occurs more rapidly and with much less pain to the mother. Perhaps it is because the force and speed of uterine contractions are slowed up, dilatation of the cervix takes place more rapidly, and the posterior segment of the levator-ani muscles is less resistant. In any event, since I have employed this method of anesthesia I have been less often forced to resort to manual or instrumental rotation of the head. There is no doubt in my mind that the type of manual rotation practiced by Loomis is superior to the conventional method, because it prevents sudden torsion of the cervical spine and cord. I also agree with Spalding that the judicious use of cervix bags will greatly aid in preventing cervical injuries. May I say in concluding that I believe selective Caesarean section, especially the low type, is far more preferable to a breech extraction of a normal size baby through a mildly contracted pelvis, provided that the surgical technique of the attendant and proper hospital surroundings warrant such an undertaking.

EDGAR BRIGHAM, M. D. (Dinuba, California)—I am sure that one of the great causes of brain injuries during delivery is sudden compression on the head or sudden release of pressure. This applies to spontaneous as well as to all forms of artificial deliveries. In some women who have spasmodic, almost overmastering, pains, I believe it is very important to enlist their co-operation in regulating the voluntary force, aiding them with sufficient anesthetic.

As stated by Emge, I find that the synergistic method of analgesia is a decided aid in converting a posterior to an anterior position. In difficult cases the manual rotation as practiced and described by Loomis should do all he claims.

Recently I delivered a small mother whose measurements, both inlet and outlet, were on the extreme border line. Great care was used in applying median forceps (axis-traction type), and the pressure was applied and released gradually in simulating labor efforts. By doing an episiotomy the child was delivered from a ROP position without internal or external head injuries. With Emge, however, I believe that Caesarean section is the safest for the child and less traumatizing to the mother in posterior positions coupled with moderate contraction of the pelvis.

Doctor Loomis has presented this subject in a very interesting and thought-provoking manner. His contribution should spur us to closer observation and more careful technique in preventing birth injuries.

RECURRENT TOXEMIA OF PREGNANCY

By HANS VON GELDERN *

A large proportion of pregnancy toxemias recur in subsequent pregnancies, and over one-fourth of these are complicated by chronic nephritis.

It is essential to segregate the chronic nephritic patients from this group because they invariably have a poor prognosis.

Kidney function tests will aid not only in making this differentiation, but will assist in determining the prognosis in future pregnancies.

The ultimate outcome of the patients with recurrent toxemia is doubtful, but carefully planned prenatal care, with the aid of kidney function tests and good judgment as to the time to terminate pregnancy, will carry through at least 75 per cent satisfactorily.

The urgent need of systematic follow-up work between pregnancies is recognized.

DISCUSSION *by Frank Ainley, Los Angeles; Alfred B. Spalding, San Francisco.*

AFTER recovery from a severe toxemia the question is raised whether it will recur in the event of a future pregnancy. Lepage, in a series of thirty-eight hospital patients suffering from toxemia of pregnancy, found that 21 per cent had recurrences in subsequent pregnancies. Records of the toxemias at the Johns Hopkins Hospital show about the same percentage.

Slemons reported eighteen private patients who had subsequent pregnancies, only three of whom had toxemia with each pregnancy, while the others showed no further evidence of toxemia. From observations made upon toxic patients with albuminuria, Slemons concluded that a reduction of albumin to a faint trace, in the course of a week following delivery, was to be regarded as a favorable prognostic indication, while a measurable amount, persisting over six to eight weeks, was evidence of damaged kidneys and an unfavorable sign for future pregnancies. An albuminuria lasting over a period of three to four weeks he regarded as a more doubtful prognostic sign. In studying the blood pressure in twenty patients, Slemons and Goldsborough found that in 75 per cent the blood pressure was normal in two weeks, indicating that no renal lesion was present, whereas in 15 per cent, clinically diagnosed as nephritics, hypertension lasted eight weeks postpartum. In two patients, or 10 per cent, the blood pressure remained elevated for one month, indicating a doubtful prognosis.

Bunzel, by means of a "Toxic Follow-Up Clinic," interviewed sixty patients who were either pregnant when seen or had been pregnant since their discharge from the hospital. Thirty-one of these

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again showed signs of toxemia, while twenty-nine did not.

Harris had the opportunity to follow up 111 patients admitted to the obstetrical service of the Johns Hopkins Hospital. Each patient returned after one year, and was studied with particular reference to the existence of renal disease. He classified the toxemias in his series into four groups, namely, eclampsia, pre-eclamptic toxemia, nephritic toxemia with convulsions, and nephritic toxemia without convulsions. Eleven per cent of the eclamptic patients who returned for study showed evidence of chronic nephritis, and about 7½ per cent had subsequent pregnancies complicated by nephritis. Harris concluded that in these patients chronic nephritis developed following eclampsia and probably resulted from it. In no subsequent pregnancy of this group did the symptoms of eclampsia reappear. Sixty per cent of the pre-eclamptic patients who returned showed evidence of chronic nephritis, nephritic toxemia occurring in all subsequent pregnancies. Those patients who were normal at the end of one year showed no evidence of toxemia in subsequent pregnancies. These facts tend to indicate that the ultimate outcome in patients recovering from eclampsia is more favorable than in pre-eclamptic toxemia, a condition which Harris is unable to explain. Many of these so-called pre-eclamptic patients must evidently have belonged to a mild or unrecognized chronic nephritic group before the onset of pregnancy. All of the members of the nephritic groups having subsequent pregnancies had nephritic toxemia. The time of onset in Harris' series is significant. In the eclamptic group the average onset was one week prior to delivery, in the pre-eclamptic patients one month, while in the nephritic groups symptoms began before the last month of pregnancy. This would indicate that the length of time the toxemic symptoms have persisted is a factor in determining the presence of permanent kidney damage and gives us a clue as to the ultimate prognosis.

Kellogg noted observations derived from 400 consecutive toxemia records of the Boston Lying-in Hospital, from forty-one private patients and from autopsies. He noticed that there was a great group of patients who, though showing no clinical manifestations of chronic nephritis when not pregnant, nevertheless in subsequent pregnancies showed evidence of kidney insufficiency or toxic symptoms, and to this group he tentatively gave the name "recurrent toxemia of pregnancy." Members of this group have undoubtedly been classed by various observers among the nephritic toxemias. By instituting thorough prenatal care, Kellogg was able to carry patients in this class through their pregnancies without showing signs of kidney insufficiency. However, there were certain of these patients in whom, in spite of the best possible prenatal care, toxemia occurred and persisted. Kellogg considered recurrent toxemia as a clinical entity, further basing his idea on the autopsy findings of two cases who showed the acute kidney lesions of toxemia of pregnancy. These observations and results brought about the establishment of a system by which each patient would be thoroughly investigated and placed into one of three groups: (1) chronic nephritis complicating pregnancy; (2) recurrent toxemia of pregnancy; and (3) acute toxemia of pregnancy. With this idea in view a definite scheme for the study of toxemia patients was established in the form of a postnatal clinic and with an adequate follow-up system. In the course of the investigation, liver function tests, blood chemistry and phthalein tests are done and the eye grounds are examined. These tests are repeated postpartum to establish the diagnosis. The cases are then grouped in a toxemic index for future reference.

This is a great step in advance and will ultimately place the diagnosis and treatment of the late toxemias of pregnancies on a satisfactory basis, providing for a more intelligent and favorable prognosis. Similar procedures have been inaugurated in the Stanford Women's Clinic, and it is hoped that in time valuable information will be obtained. Of our 3338 confinements there were 135, or about 4 per cent of patients, whose symptoms, blood pressure determinations and laboratory findings were such as to class them in the group of toxemia of pregnancy. Owing to the fact that these records extend over a period of several years, that the observations were made by various attending physicians, many only temporarily connected with the obstetrical department, and that, although a large amount of social service work has been carried on for years, no systematic follow-up of the toxemic patients has been attempted until recently, the data concerning these patients are far from complete.

Our follow-up records show that twenty-seven toxic patients have had subsequent pregnancies, of whom thirteen had one or more normal pregnancies following the toxic one. The fourteen patients who showed recurrent toxemia had sixty-one pregnancies, of which thirty-eight pregnancies were complicated by toxemia. Twenty-five patients of 135 had convulsions. Twenty-one of these were primiparas and four were multiparas; two had spontaneous abortions following their eclamptic pregnancy; one had eclampsia followed by two normal pregnancies; while three had one or more toxic pregnancies following the one complicated by eclampsia. However, no patients in this series had recurrent eclampsia. In the eclampsia patients the maternal mortality was 16 per cent. The fetal mortality was 20 per cent, 12 per cent occurring in patients with recurrent toxemia.

The group of fourteen patients having recurrent toxemia was studied with respect to the character, onset and duration of symptoms in each pregnancy, antepartum and postpartum findings on urinalysis, antepartum and postpartum blood pressure readings, and to the results of certain kidney function tests. The special tests used in the diagnosis were the phenolsulphonphthalein test, blood urea, and the determination of the percentage of normal kidney function as figured from a method developed by Addis. This method is based on the observation that under certain special conditions the function of the kidney is limited by, and becomes a measure of, the quantity of effective tissue it contains. Under these conditions experiments have proved that the ratio $\frac{\text{urea in one hour's urine}}{\text{urea in 100 cc. blood}}$ equals the amount of effective renal tissue. The average ratio in normal adult males was found to be 50.4, which is the accepted standard to represent 100 per cent normal renal

function. Spalding, Shevky, and Addis applied this test to a series of pregnancy patients both toxic and nontoxic, and figured the renal capacity of each patient with respect to the per cent of normal average ratio. The normal pregnancy patients showed an average of 106 per cent of normal ratio, while the toxic patients showed in general variable percentages below 100 per cent. These observers supplemented the test by a careful study of the urinary sediment, which indicates whether the kidney lesion is in the main inflammatory, degenerative or atrophic. They concluded that the danger lies not in the extent of the renal lesion during the acute toxemia, but in the fact that it may fail to heal and may become a continuing and self-perpetuating disease which either alone or with the help of a complicating arterial disease may ultimately lead to the death of the patient in uremia. Our toxic follow-up work now includes for each patient several complete kidney function tests as above mentioned and, although the results are not yet completed, this promises to be of great prognostic value in recurrent toxemia.

Applying the above methods of diagnosis to fourteen patients who had toxic recurrences, it was found that four patients, or about 28 per cent, either had or developed in the course of their pregnancies chronic nephritis, while ten patients with recurrent toxemia had no demonstrable kidney lesions. The four patients with chronic nephritis had interesting obstetrical findings. The first had four toxic pregnancies, death following hysterotomy at nineteen weeks because of chronic nephritis. The second had three toxic pregnancies and showed a deficient kidney function before the last delivery. On examination two years later she showed a heavy cloud of albumin and a blood pressure of 230 systolic and 150 diastolic. In each pregnancy the symptoms were progressively more sever and appeared earlier. The third patient had four toxic pregnancies and showed deficient kidney function both before and after the delivery of her third baby at term. Her fourth toxic pregnancy was terminated by Caesarean section, and sterilization was done to protect her kidneys. The fourth patient was delivered by Porro Caesarean section in the eighth month of her second toxic pregnancy. Her blood pressure was 270 systolic and 150 diastolic, and the urine showed a heavy cloud of albumin, hyalin, and granular casts. Four years later the blood pressure was 236 systolic and 136 diastolic. These four patients bring out the following points: that in chronic nephritis complicating pregnancy there is a relatively early onset of symptoms, earlier with each succeeding pregnancy; persistence of pathologic changes in the urinary organs over a period of months following delivery and often never completely clearing up; a hypertension of marked degree, persisting and increasing in spite of extensive prenatal care; and a deficient kidney function.

We meet another difficult problem when considering the group of recurrent toxemia patients without evident permanent kidney damage, because the prognosis is doubtful. Ten patients were placed in this group for the following reasons: (1) relatively late onset of symptoms, with a variable but usually earlier onset in subsequent pregnancies; (2) relatively late and sudden onset of pathological disturbances of the urinary organs; (3) rapid clearing up of the urine postpartum; (4) late development of hypertension with a rapid return to normal level; and (5) a normal or somewhat impaired renal function showing improvement after delivery.

Seven of these patients, with the aid of watchful prenatal care, were carried through their last toxic pregnancies and labors satisfactorily. Two patients were delivered at term, one spontaneously and one by version and breech extraction. In five patients pregnancy was terminated in the ninth month because of the severity of their symptoms. Three had labor induced and were delivered by version and breech extraction, and two were delivered by Caesarean section and were sterilized.

The other three patients had a less fortunate outcome. The first patient had her first baby prematurely by Caesarean section for eclampsia. Three years later she was delivered prematurely of a macerated fetus, low forceps being used in the second stage. The following year a Porro Caesarean section was done for placenta ablatio, and the fetus was stillborn. However, kidney function tests showed no impairment of renal function, and her symptoms cleared up rapidly between pregnancies. The second patient had one therapeutic abortion for hyperemesis. Her second pregnancy was terminated by Porro Caesarean section at six months because of severe toxemia, which began soon after conception and became progressively worse. She and the baby died within one day after the operation. Autopsy showed extensive necrosis of the liver and kidneys. The third patient was delivered by Caesarean section for severe toxemia accompanied by coma. After the operation she became delirious, but her symptoms finally cleared up and within two weeks the urine was negative and the blood pressure normal. Two years later she developed eclampsia in the seventh month and died a few hours after a Caesarean section. The baby lived one month. These last records show that with the ordinary clinical means it is difficult and often impossible to determine which patients in this group can be carried through their pregnancies without endangering their lives.

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DISCUSSION

FRANK C. AINLEY, M. D. (1136 West Sixth Street, Los Angeles)—Those patients in whom nephritic toxemia exists during successive pregnancies, and those in whom an eclamptic toxemia appears with the first pregnancy and nephritic toxemia appears during subsequent pregnancies, offer little difficulty, but whether or not it will be found that there is such a thing as "recurrent toxemia of preg-

nancy" as an entity will depend upon a more extensive knowledge of the biochemistry of the pregnant woman than exists at the present time.

A recent patient under my care is of particular interest. She was observed during three pregnancies and deliveries. In all of the pregnancies she showed evidence of toxemia, with no evidence of kidney insufficiency after the first or second. Late in the third pregnancy she developed convulsions and died shortly after delivery. At autopsy the kidneys were found to be quite normal, but the liver showed the hemorrhagic lesions characteristic of eclampsia. The findings suggest the possibility that an eclamptic toxemia might have been present in three successive pregnancies without producing chronic kidney change, or there still remains the possibility that the first and second pregnancies were associated with some other form or forms of toxemia neither eclamptic nor nephritic, but of some type which will only be understood when our knowledge of the chemical processes in the body of the pregnant woman are more thoroughly understood.

The infinite number of biochemical variations possible during pregnancy which might result in an intoxication of the patient would seem to make it probable that there may be a number of different toxemias, of which eclampsia, with its specific pathological lesions in the liver, is only one example, and it is conceivable that a patient might experience a different toxemia with each of successive pregnancies, none of which necessarily showing marked or permanent kidney symptoms.

ALFRED B. SPALDING, M. D. (Stanford Hospital, San Francisco)—Doctor von Geldern is to be congratulated for presenting so clearly a survey of the American literature in regard to clinical observations so far made in a few clinics on recurrent toxemia of pregnancy. I would like to emphasize the difficulties that are met with in successfully conducting a follow-up clinic for pregnancy patients. Because of the expense associated with such work, only a few clinics can even partially carry on this work. I think here is where some good work can be done by public health nurses to help private doctors to educate their patients to the needs of study after a toxic pregnancy. While we know very little about toxemia of pregnancy, it seems justifiable to agree with Von Geldern that a considerable number of pregnancy toxemias recur in subsequent pregnancies and that many of these are complicated by chronic nephritis. I would like to emphasize the prognostic value of quantitative renal function tests such as have been conducted at Stanford University School of Medicine for a number of years by Thomas Addis. With a kidney function test normal a year after delivery, it is justifiable to advise such a patient to again attempt pregnancy, provided she can have careful prenatal care. Where the late kidney function test shows persistence of kidney damage, the prognosis of future pregnancies is very grave.

Many doctors think that they lose patrons by adopting business methods in the collection of bills for professional services rendered. As a matter of fact the contrary is the case. Prompt payment makes friends, and slow payment often makes enemies. Seldom, if ever, does a reputable doctor fail to extend appropriate leniency to the deserving poor, but there are very few people who cannot afford to pay something, be the amount ever so small. It would be far better for those in moderate circumstances, if their self-respect is to be preserved, if given an opportunity to pay within their means.—J. Indiana M. A.

Educators are quite generally agreed these days that health should be given most importance in the school curriculum. At the same time some of them point out that health is something we cannot define. In a way health cannot be defined, but neither can we define life, and we are constantly revising our notions about such fundamental phenomena as matter and energy. Even when we work out our definition of health it does not apply specifically as does a definition of electricity or of ether, for the health of one person is by no means the health of another.—M. J. and Record.

ANTI-SCIENTIFIC PROPAGANDA

By PETER FRANDSEN *

THIS country seems to be especially favored in the development of all sorts of pseudo-scientific cults and anti societies. The anti-vivisectionists have been with us for a long time, but lately their strength, or at least their noise, has been increasing. The anti-vaccinationists seem to be getting more noisy, and they have succeeded in overturning legislation designed to control the spread of smallpox in several states. In Minnesota, since 1903, they have prevented the enactment of contagious disease control legislation. It is not surprising then that that state should have a record of 9000 cases of smallpox in 1921. Massachusetts, with a compulsory vaccination law, has not had more than forty cases annually since 1917. California repealed its compulsory vaccination law, and had over 5000 cases that year. Connecticut, Montana and other states have weakened their state laws because of the influence of the anti-vaccinationists. Is it any wonder that smallpox is one thousand times more prevalent in Montana than in Massachusetts in proportion to population, and that the rate in California is fourteen times as great as it is in Japan?

Pseudo and unscientific cults are springing up and finding it easy to get a hold on the popular mind, and are making some headway in establishing themselves on an equally recognized basis with scientific medicine. The legislature of West Virginia in 1925 passed an act recognizing naturopathy and chiropractry as accredited forms of healing. In most states, religious healers, neuropaths, psychopaths, herbalists, food fad healers, as well as osteopaths and chiropractors, find little difficulty in practicing on patients for all sorts of human ailments. While all these antis differ in their origin and propaganda, they are alike in that they are an attack upon the scientific methods not alone in medicine but in all fields of knowledge. The anti-evolutionists have at least made a fair start, and what they may yet accomplish in legislation affecting the teaching of theories based upon scientifically observed facts remains to be seen. This movement may easily extend itself to other matters than the question of man's origin.

What are the reasons for all this anti propaganda and its success? How may its capacities for harm be counteracted? are questions that call for an answer from those trained in scientific methods. Some of the propagandists are fanatics whom we will always have with us, but a substantial percentage of their followers are intelligent men and women. Some have an exaggerated notion of what they call personal liberty and the right to their own beliefs; others are sentimentalists in their attitude toward animal life as compared wth human life. The new schools of healing find a listening ear in their appeals to prejudice and ignorance, the human love

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